

A Thesis

On

Tetanus Passed March 13th. 1827
W. S. H.

By

John P. Hardaway

of Virginia. -

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Of Tetanus.

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This is one of the most dangerous diseases which attack the human system. It was long known to the ancients, and different names were given to it, according to the parts which it affected. When it was confined to the muscles of the back, of the neck extending to those of the back, it was called *Opisthotonos*, when it attacks the muscles of the fore part of the body, it was termed *Emprosthotonos*, when it was confined to the side of the body, bending the body towards the side affected, it was called *Tetanus Lateralis*, or *Pleurosthotonos*, and when the spasm affected the muscles of the whole body, it was distinguished by the name of *Tetanus*. It is not unfrequently confined solely to the muscles of the jaw, and is called *Tismus*, or *Lock jaw*; Dr. Cullen once supposed this to be a distinct disease, which opinion he afterwards rejected, and it is now agreed by all medical writers that have come under my observation, that it is one and the same disease, by whatever causes produced, or whatever

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by using the
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muscles are concerned. Tetanus occurs in every climate, but more frequently in the warmest, and in the warmest season of that climate. No age, sex, or temperament is exempt from this dreadful disease, but it attacks persons, of middle age, and those of robust, and plethoric constitutions more frequently than any other, and the male oftener than the female, but why this disease attacks more frequently the male, I am unable to say, unless it is that they are more exposed to the remote and predisposing causes; for we have no proofs of there being any constitutional predisposition in the male, to attacks of this kind. This disease ~~sometimes~~ comes on suddenly and violently, but generally it approaches very gradually.

The symptoms are, at first, a slight stiffness which is perceived in the back part of the neck, and after a short time, the motions of the head become difficult and painful. As the rigidity of the neck comes on and increases, there is commonly at the same time a sense of uneasiness felt about the root

of the tongue, together with some difficulty of swallowing, and a great tightness is perceived about the chest, with a pain at the extremity of the sternum shooting into the back. A stiffness also takes place in the jaws, which soon increases to such a degree, that the ^{teeth} become closely set together, and will not admit of the smallest separation.

In some cases the spasmodic affection extends no farther; in others the spasms return frequently and are more general, they affect not only the muscles of the neck and jaw, but extend to those of the spine, bending the body forcibly backwards.

During the whole course of this disease the abdominal muscles are violently affected with spasm, so that the abdomen feels very hard, and most obstinate constipation prevails; both the flexor, and extensor muscles of the lower extremities are convulsed at the same time, so as to keep the limbs rigidly extended.

At the height of this disease every organ of voluntary

motion becomes irregular, the eyes are rigid and immovable in their sockets, the countenance is horribly distorted, the strength is exhausted, the pulse becomes irregular, and universal spasm puts an end to the life of the patient. It is something very surprising that during the spasmodic contractions of the muscles, the senses remain perfect and entire; attacks of this kind are seldom attended with fever, although sometimes a fever appears, and continues throughout the whole course of the disease. When this disease arises in consequence of a puncture, a wound, or laceration, the convulsions come on about the tenth or fourteenth day, but when it arises from suddenly taking cold, it makes its appearance much sooner; however there is no particular period at which the spasms make their appearance from the time of receiving the injury. Dr. Rush mentions that when a puncture happens in any tendinous part (viz the palm of the hand, or sole of the foot) and heals up without

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any pain, or inflammation, Tetanus is always to be apprehended. It was once the opinion that when Tetanus arose from punctures or wounds, it would inevitably prove fatal; Dr. Thomas mentions that he never met one met with a cure under such circumstances, with a very extensive practice and a long residence in the West Indies. The late Professor Rush states, that the more Tetanus is often proved mortal. A wound from a nail is because it is confined only to one of the systems of the body (to wit, the muscular system) it extends to the arterial system, producing since it gives the danger of the disease, and frequently cures it. To guard against this disease to fatal issue may be secured by a strict attention to the symptoms. When the spasmodic contractions of the muscles are violent, and painful, and at the same time almost of very little duration, but are immediately renewed with undiminished violence, drawing the patient in the most horrible positions.



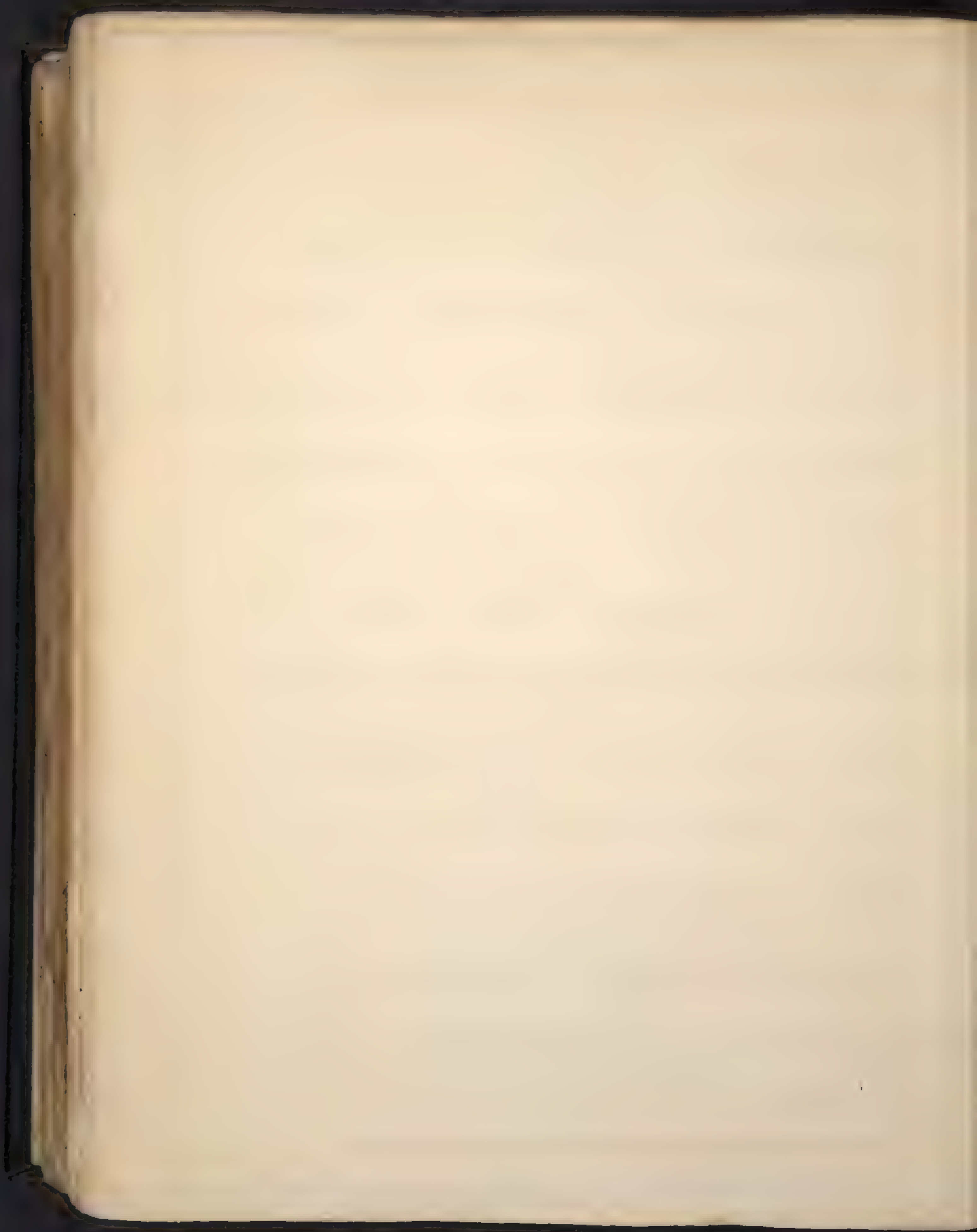
and the jaws so locked, that it is impossible to administer any medicine. The disease commences in the jaws & teeth. But when the muscles are alternately contracted, and relaxed, and during the relaxation, the functions of the body return to their natural state; by the aid of a skilful practitioner, the patients suffering may be alleviated, and in all probability be restored to perfect health. It is a fact admitted by all writers that assimilation and digestion of food is not, at all affected, and in fact every function of the body is uninterrupted until nearly the close of the disease. An attack of Tetanus has sometimes been induced, was once supposed to be incurable; this opinion prevailed among practitioners during the ignorant state of medicine (if I may be allowed the expression). But there are now recorded many cases of Tetanus cured by medicines. I ought to be mentioned, and if the science of medicine continues to improve with time



capable of much it has been seen, as the last I utter.
I have not the smallest doubt, that in the disease
will be as completely under the control of medicine,
as an intermittent fever. Discovering no more in it,
was advanced and supported an opinion that this dis-
ease was confined, particularly to the sinuses of the
head, if they had reflected but for a moment.
I'm afraid have been at one ~~time~~ convinced of the
futility of their opinions; the objects of study are
entirely, more generally attended to this disease
than any other set of facts, but it is not an
consequence of their being a constitutional predisposition,
but because they are more exposed to the sun, heat
shaking, and exciting causes of this disease. In the
innumerable cases of dissections of persons who have
had of this disease, nothing particular was ever
discovered, except now and then a few
cases, there has been an opinion in the common
and medical world, that the blood, which happens



very common in many diseases. Having given
a correct history of this disease of I have been
able to enumerate the principal causes.
The chief causes, however, it was once
thought that a violent emotion or a fever or
some was the only cause of this disease. But the
disease is increased, for there are numerous cases
in which it attacks the mind in consequence of
very superficial wounds and trivial causes, for
instance the stroke of a club on the arm, cutting
across the artery, the sting of a wasp, and many
such cases have been known to bring on a delirium
of the mind. Cold weather, applied to the head
when it is not at all inflamed, or when there
is a great abundance of vapors and carbonic acid
matters in the circulating system, certainly increases
the danger of death after long listless
paralysis. At various occasions we have seen
of the mind in the most violent manner. That it



now it brought on by terror in a degree of *spasmodic*.
 This disease is now and then brought on in children,
 by cooling the vessel strongly from the cold usually
 of the mucous returned in the hands, cold applied
 to the body & other but has been confined to a hot
 room, and worms in the intestines. When these
 whole causes have been applied to the body, they
 do not immediately produce the *spasm*, but
 very frequently require the cooperation of an
 exciting cause to bring on the painful and
 spasmodic affection of the muscles. Having ex-
 posed the causes of this disease with precision it
 would seem that I ought to explain their man-
 ner of operating, but it would be tedious and
 unnecessary in me to attempt a theory on this
 subject, which is pressed over in silence by
 Dr. Cullen and many other celebrated phy-
 sicians, and handled with diffidence by
 me. I cannot say I wish to do justice to



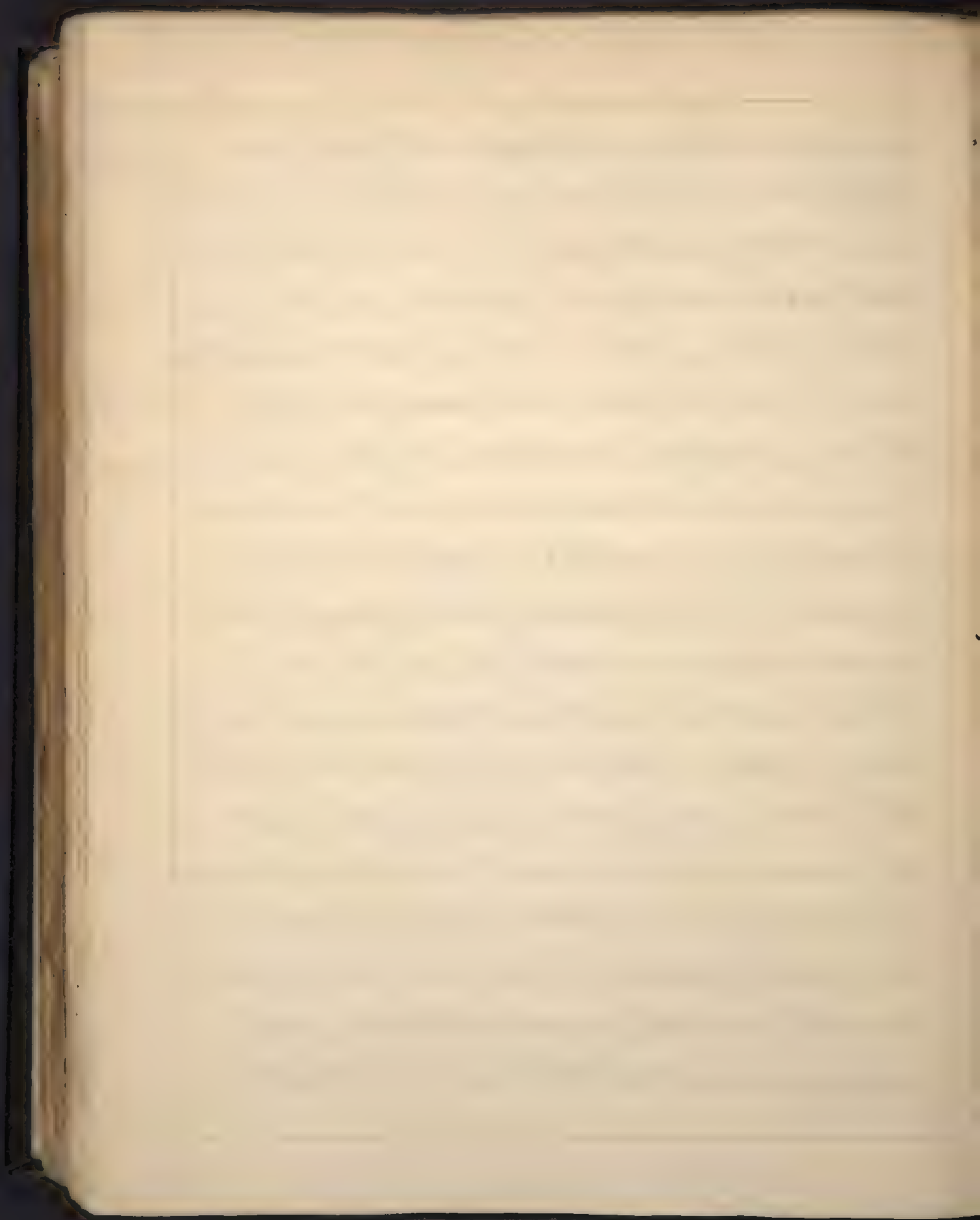
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is so great so intricate and obscure as this is, and
therefore must consign it to some enterprising genius
of posterity, who may present a more accurate
and satisfactory explanation than the one detailed
by Dr. Rush in his medical inquiries. It was
not my intention in treating of this subject to
have enumerated all the remote and exciting causes
of Tetanus which have been mentioned by medical
writers, because it would far exceed the limits of
this essay; I therefore have been as concise as poss-
ible. It now only remains for me to treat of the
method of cure. When Tetanus is the effect of
wounds, some practitioners have agreed that the part
should be removed if convenient, or eroded by
caustic, so as to destroy the communication between
the wound and sensorium. If it was possible
for us to judge from particular appearances of
a wound that convulsions would come on, (which
by the way is impossible) it would seem that one



might resort to the operation with propriety.
 But those who will read the treatise of ~~examine~~
 the different treatises written on the subject, will
 find that embulation has never been practised
 until the spasms have subsided, and that as
 many patients have died after the operation as
 before, and not only this, we know that embulation
 is very frequently one of the causes of this disease.
 These I think are sufficient arguments against
 a practice of this kind. Musth, and Camphor
 have been recommended as beneficial in this
 disease, but experience has proven that they
 are very inefficacious remedies. Those practitioners
 who not mastered these two remedies, generally
 combined with them, opium, and I am induced
 to believe from late practice, that the salutary
 effects imputed to the Musth and camphor were
 entirely owing to the operation of the opium,
 for I have seen it mentioned, that Musth has



been given to the extent of one hundred and
 fifty grains in the space of twenty four hours
 in an attack of Tetanus, but had not the im-
 mediate effect whatever in palliating or relieving
 the symptoms. Warm bathing has been employed,
 and it was thought with some advantage
 by some writers. But from the facts mentioned,
 it seems to have been attended with no kind
 of advantage, and that it was absolutely
 injurious to the patient. The inefficacy of this
 remedy has been ascribed to the position of
 patient, which he must necessarily undergo in
 taking of the bath, and it has been observed,
 that motion of any kind is very apt to excite
 the spasmodic convulsions. It seems to me to depend
 on something less than this, but what I cannot
 pretend to explain. Physicians have frequently
 tried the cold bath in cases of Tetanus, with
 some good effect. It proved particularly



useful in this disease, in the 2^d ed of Dr. Wright. He did not implicitly rely on it, cold bath, for there were other remedies given at the same time, but from the authority of this gentleman, the remedy is certainly entitled to a more extensive trial. Dr. Rush mentions that he has witnessed the good effect of this remedy in several attacks of this kind.

The best and most approved method of treating this disease, and remedies principally to be relied on are the following. When the remote causes of the disease can be distinctly discovered, I need hardly say they should if possible be removed immediately, but when wounds or punctures are the causes, and the puncture is not sufficiently large, it should be dilated, and stimulated with the Spirits of Turpentine, so as to bring an inflammation and healthy suppuration, which appears necessary for a favorable termination of this disease.

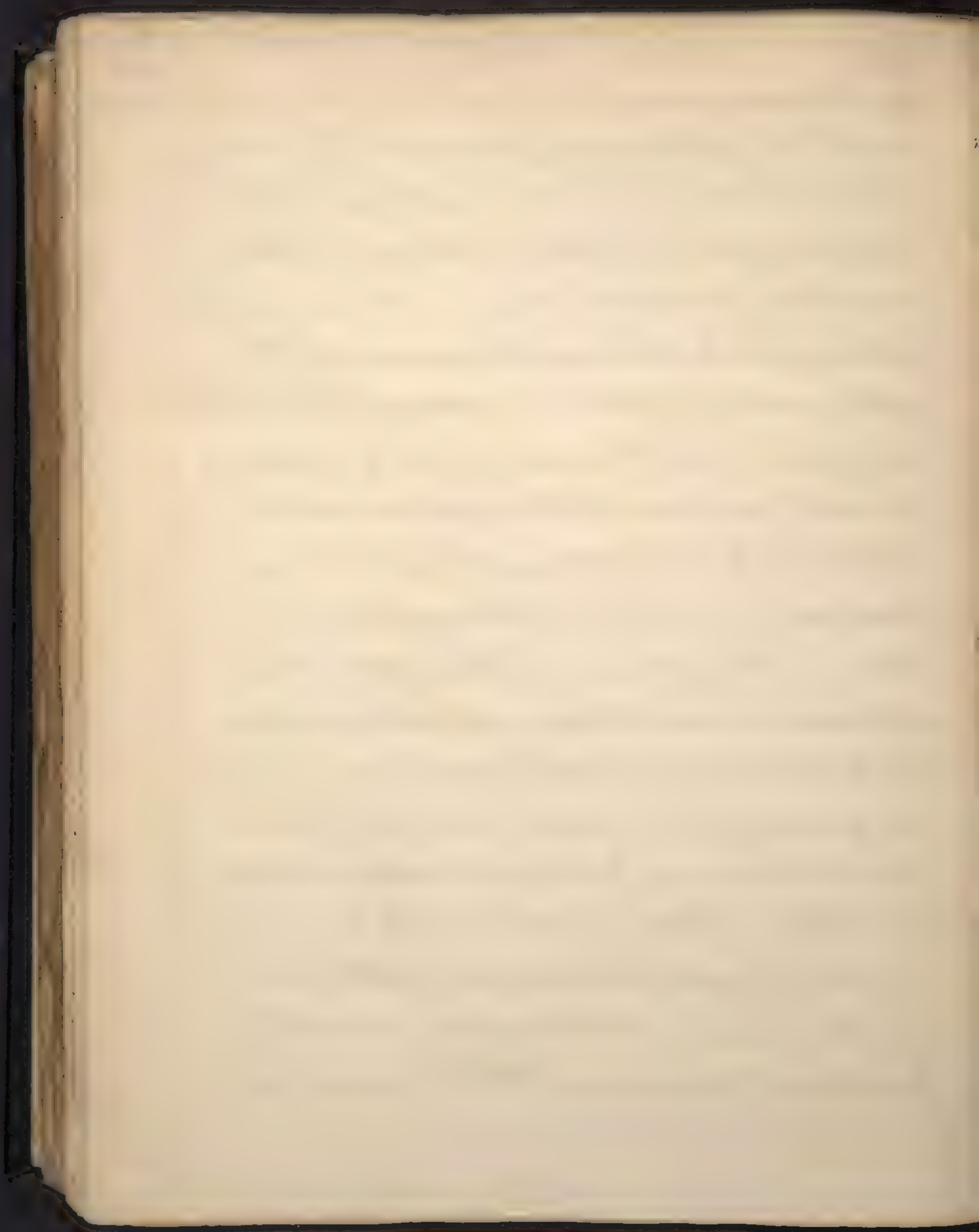


at the same time, opium is to be exhibited.
and that to a very large extent, it is to be
given in large doses frequently repeated.

If from the first dose of opium the convulsions
give way, the medicine is not to be laid aside,
but continued until there is not the smallest
symptom of the remains of the disease. This
remedy has been exhibited to an extent, which
under any other circumstances would have cer-
tainly destroyed the patient, but not one of
the deleterious qualities of this medicine has
been witnessed from its administration
in the tenses. Dr. Physick prefers to administer
opium by way of injections, in doses of from
five to eight grains, repeated at short intervals,
until the spasms be overcome. It would be
needless for me to offer any facts in support
of the efficacy of this medicine in this
disease, for they are innumerable, but will



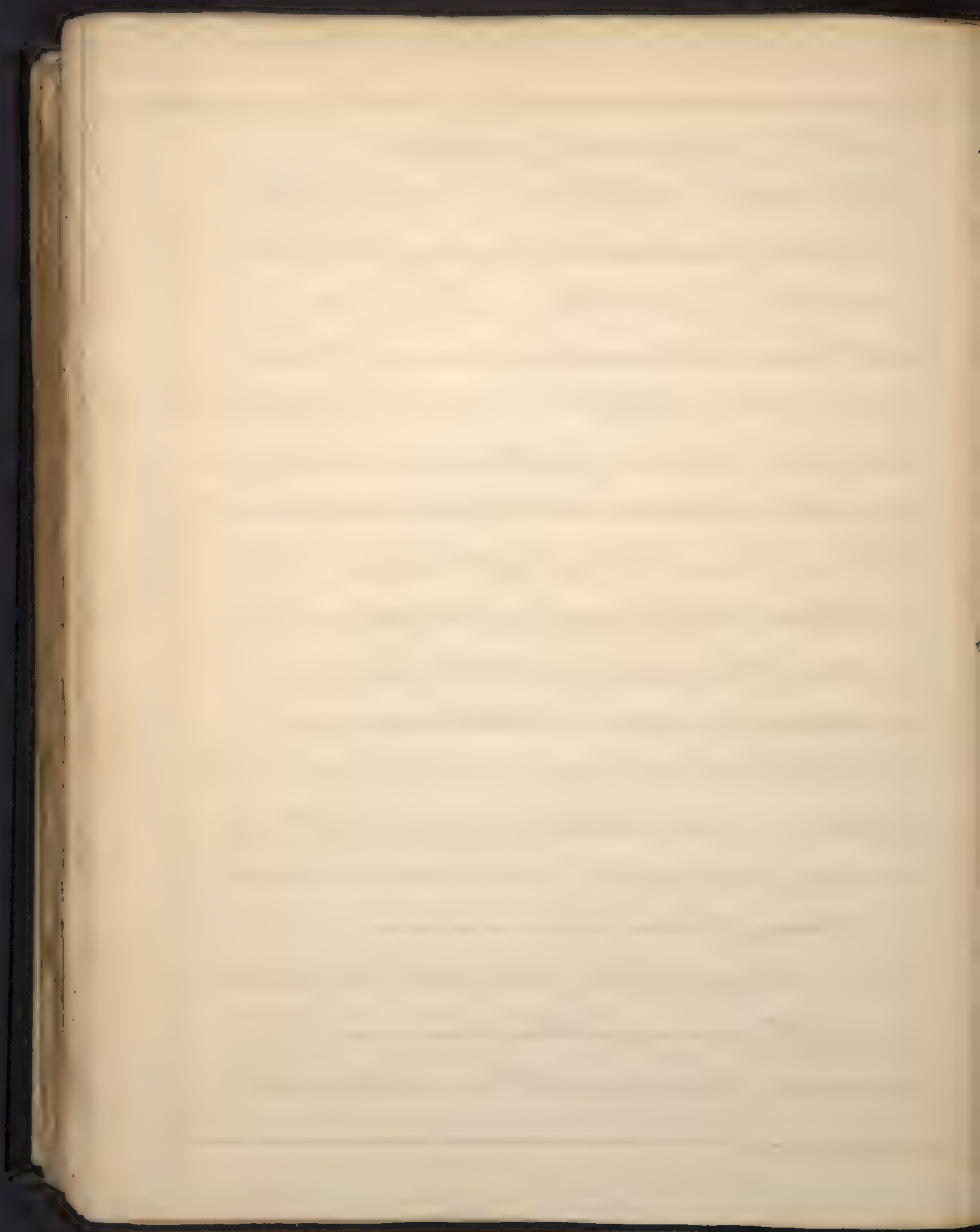
merely state, that opium stands at the head
 of the list of remedies prescribed in this
 painful affliction. Together with opium, Bark
 and Wine are also to be given to a very large
 extent; while the narcotic power of the
 opium seems to relieve the spasms, these two
 medicines act by their tonic effect in giving
 strength and tone to the system, which
 appears to be worn down from the frequent
 spasmodic convulsions. Mercury has been
 tried in this affection with considerable suc-
 cess when a salivation was excited quickly.
 Would not fumigation with mercury be a means
 of producing salivation immediately? I have
 in the preceding part of this essay stated
 that the functions of organic life were not
 at all interrupted, until nearly the close
 of the disease, and it seems to me probable, by
 this mode of proceeding, that the system



would be immediately affected.

acrid spirits and Electricity are recommended in this disease. I am unable to say any thing in support of or against their exhibition, but no doubt from the stimulating power of these remedies, they might be advantageously combined with other remedies. I might go on and enumerate many other remedies, but think it useless, as they have proved to be ineffectual, and as I have stated, that it was my intention only to mention those remedies that have been sanctioned by modern practitioners.

Bloodletting has been recommended by some, and objected to by others; but if I may be allowed to reason from analogy, I see no cause to doubt the efficacy of bloodletting in Tetanus, as it is used in the aneurism, in dysentery, in Tracheitis, and it is the opinion of the Physicians of the present day, that they will terminate, rapidly,



by a spasm of the glottis. In support of the utility of venesection, I will also relate a case which came under my observation; Mr. Pucepton was called to a patient labouring under very violent spasmodic convulsions, which was brought on by bathing very early in the spring. He administered the opium, bark, and wine, and pushed them to a very great extent, but with no advantage whatever to the patient, the pulse at the same time was hard, full and quick, baffled in the first attempt, the stimulants were laid aside, and bloodletting prescribed, as soon as it was performed the symptoms gave way, and after the third bleeding, he was entirely relieved, and now enjoys perfect health. To be more explicit, this disease ought to be treated according to the state of the system, when the convulsions come on, and the patient's pulse is feeble and very weak, the remedies

In a letter to the Editor of the
Boston Herald, dated Nov. 1st, 1846,
I have some remarks on the subject
of the proposed amendment to the
Constitution, which would give
the right of suffrage to all
persons who have resided in
the State for a certain period
of time, and who are of the
age of twenty-one years, and
who are not disqualified by
any law of the State. I have
the honor to acknowledge the
receipt of your letter of the
10th inst., and in reply to
inform you that the same
has been forwarded to the
proper authorities for their
consideration. I am, Sir,
very respectfully,
Yours,
J. W. Alden

heretofore recommended are to be employed and pushed to a very great extent; but when the pulse is full, hard, and quick, I see no reason why a vein should not be opened without hesitation.

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